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<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	10/705,250	
	Filing Date	November 10, 2003	
	First Named Inventor	Hiatt et al.	
	Group Art Unit	2125	
	Examiner Name	S Shechtman	
		Attorney Docket Number	2269-5558A US (99-0253.00/US)

ENCLOSURES (check all that apply)		
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<input type="checkbox"/> Amendment under 37 C.F.R. § 1.116 in response to final office action dated	<input checked="" type="checkbox"/> Appeal Brief (14 pages); Claims Appendix (7 pages); Check no. 8572 in the amount of \$500.00	<input type="checkbox"/> Other Enclosure(s) (please identify below):
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<input type="checkbox"/> Letter to Chief Draftsman and copy of FIGS. with changes made in red	<input type="checkbox"/> Assignment Papers (for an Application)	
<input type="checkbox"/> Transmittal of Formal Drawings	Remarks	
<input type="checkbox"/> Formal Drawings ( sheets)	The Commissioner is authorized to charge any additional fees required but not submitted with any document or request requiring fee payment under 37 C.F.R. §§ 1.16 and 1.17 to Deposit Account 20-1469 during pendency of this application.	

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm or Individual name	Brick G. Power	Registration No. 38,581
Signature		
Date	October 26, 2005	

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**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

**In re Application of:**

Hiatt et al.

**Serial No.:** 10/705,250

**Filed:** November 10, 2003

**For:** HANDLING SYSTEM FOR USE  
WITH PROGRAMMABLE MATERIAL  
CONSOLIDATION SYSTEMS AND  
ASSOCIATED METHODS

**Confirmation No.:** 3203

**Examiner:** S Shechtman

**Group Art Unit:** 2125

**Attorney Docket No.:** 2269-5558A US

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**APPEAL BRIEF**

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Attn: Board of Patent Appeals and Interferences

Sir:

This APPEAL BRIEF is being submitted in the format required by 37 C.F.R.

§ 41.37(c)(1), with the fee required by 37 C.F.R. § 41.20(b)(2).

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I. REAL PARTY IN INTEREST

U.S. Serial No. 10/705,250 (hereinafter “the ‘250 Application”), the application at issue in the above-referenced appeal, has been assigned to Micron Technology, Inc. The assignment was recorded with the United States Patent & Trademark Office (hereinafter the “Office”) on May 10, 2004, at Reel 015309, Frame 0386. Accordingly, Micron Technology, Inc. is the real party in interest to the above-referenced appeal.

II. RELATED APPEALS AND INTERFERENCES

Neither appellants nor the undersigned attorney are aware of any appeals, interferences, or any other actions that are currently ongoing before Board of Patent Appeals and Interferences (hereinafter “the Board”) or any federal court that may affect or be affected by the decision of the Board on this appeal of the final rejections of the claims of the ‘250 Application.

III. STATUS OF THE CLAIMS

Claims 1-33 are currently pending and under consideration in the ‘250 Application.

The Examiner has presented final rejections against each of claims 1-33.

The final rejections of claims 1-33 are being appealed.

IV. STATUS OF AMENDMENTS

The ‘250 Application was filed on November 10, 2003, with thirty-three (33) claims.

A Preliminary Amendment was made to the ‘250 Application on April 27, 2004.

On January 26, 2005, a first action on the merits of claims 1-33 was issued. The Office rejected each of claims 1-33 in the first Office Action. An Amendment was mailed on April 26, 2005, in response to the first Office Action. In that Amendment, various claim revisions were presented along with explanations as to the patentability of the claims over the art upon which the Examiner had based his rejections.

A final Office Action was mailed on June 15, 2005. Although the grounds for rejecting claims 1-33 were revised somewhat, the Examiner relied upon the same art in his newly presented final rejections of the claims. In response to the final rejections of claims 1-33, an Amendment under 37 C.F.R. § 1.116 was filed on August 11, 2005. In addition to minor revisions to the claims, additional reasoning was presented to convince the Examiner of the patentability of claims 1-33.

As evidenced by the Advisory Action of August 23, 2005, the Examiner was not convinced that claims 1-33 are patentable over the prior art; the final prior art rejections of these claims having been maintained. The Examiner did, however, withdraw his objections to the drawings and his final rejections of the claims under the second paragraph of 35 U.S.C. § 112, and indicate that the claim amendments that had been presented in the Amendment under 37 C.F.R. § 1.116 would be entered when a Notice of Appeal was filed in the '250 Application.

A Notice of Appeal was promptly filed on August 26, 2005, and is followed by this APPEAL BRIEF, which is being filed within two months of the date on which the Notice of Appeal was filed.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The claims of the '250 Application are directed to programmable or programmed material consolidation systems. Such a programmable or programmed material consolidation system includes means for fabricating one or more objects with a programmed material consolidation process (*see, e.g.*, paragraphs [0015] and [0016]), as well as means for handling one or more substrates (*see id.*; *see also* FIG. 2; paragraphs [0021] and [0059]). The means for fabricating may include at least one fabrication site for effecting the programmed material consolidation process. *See id.* The means for handling is configured to introduce one or more substrates into the means for fabricating, as well as for removing the one or more substrates from the means for fabricating. It may comprise a substrate handling system. *See id.*

The '250 Application also includes claims that are drawn to methods for fabricating objects. Such a method includes introducing the substrate into a fabrication site with a substrate handling system, and using a programmed material consolidation process to fabricate at least a portion of at least one object at the fabrication site. *See id.* In addition, the substrate same handling system is used to introduce another substrate into another fabrication site, where a programmed material consolidation process may be used to fabricate at least a portion of at least one object on that substrate. *See id.*

VI. ISSUES ON APPEAL

(A) Whether claims 1-23 recite subject matter that, under 35 U.S.C. § 102(b), is novel and, thus, patentable, over the subject matter described in U.S. Patent 3,889,355 to Aronsatein (hereinafter "Aronsatein"); and

(B) Whether, under 35 U.S.C. § 103(a), the subject matter to which each of claims 24-33 is directed is non-obvious and, thus, patentable over the subject matter taught in U.S. Patent 4,027,246 to Caccoma (hereinafter “Caccoma”), in view of teachings from Aronsatein.

VII. ARGUMENT

A. REJECTIONS UNDER 35 U.S.C. § 102

Claims 1-23 stand rejected under 35 U.S.C. § 102(b) for reciting subject matter that is allegedly anticipated by the subject matter described in Aronsatein.

1. APPLICABLE LAW

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

2. ART RELIED UPON

*Aronsatein*

The description of Aronsatein is directed to a system for conveying individual semiconductor wafers from one semiconductor device fabrication process sector to another. Aronsatein provides examples of semiconductor device fabrication process sectors, including an

oxidation sector, a source and drain implantation sector, a gate oxidation sector, a pattern generating unit, a metallization sector, and a sintering sector. Col. 23, lines 59-66. Each wafer may be identified and moved under control of a computer. Col. 24, line 17, to col. 26, line 4.

3. ANALYSIS

Claims 1-23 are directed to subject matter that is novel over the subject matter described in Aronsatein. The programmed material consolidation system of independent claim 1 includes at least one fabrication site for effecting a programmed material consolidation process. The programmed material consolidation system also includes a substrate handling system configured to introduce one or more substrates into the at least one fabrication site.

It is apparent from the assertions that appear at page 8-10 of the Final Office Action that the Examiner does not appreciate the meaning of the phrase “programmed material consolidation” or the features of a fabrication site that is configured to effect a programmed material consolidation process. By its plain language, the phrase “programmed material consolidation” refers to processes in which material is consolidated in accordance with or under control of a program.

The Examiner’s misunderstanding of the meaning of the phrase “programmed material consolidation” is somewhat peculiar since, at page 9 of the final Office Action, the Examiner cites language from the specification of the ‘250 Application that provides guidance as to the meaning of the phrase “programmed material consolidation.” Specifically, page 9 of the final Office Action lists stereolithography, layered object manufacturing (LOM), selective layer sintering (SLS), laser engineered net shaping (LENS) and “other so-called ‘rapid prototyping’

technologies” as examples of programmed material consolidation techniques. It is notable that none of these processes is a conventional semiconductor device fabrication process.

Further, the Examiner has misinterpreted “layered object manufacturing” to be descriptive of conventional semiconductor device fabrication processes. Instead, “layered object manufacturing” is a proprietary term used to describe the process effected by equipment that was available from Helisys, Inc., of Torrance, California. “Layered object manufacturing” is described in U.S. Patents 5,730,817 and 5,876,550 to Feygin et al., copies of both of which should be present in the file for the ‘250 Application. It is clear from the descriptions provided in these references that “layered object manufacturing” is not a conventional semiconductor device fabrication process.

Conventional semiconductor device fabrication processes do not include “programmed material consolidation.” A standard photolithography process is one example of a conventional semiconductor device fabrication process the Examiner has inappropriately attempted to identify as a “programmed material consolidation” process. *See, e.g.*, Final Office Action, pages 9 and 10. One of ordinary skill in the pertinent art would readily understand, however, that photolithography processes, in which material is consolidated by exposing a resist through a reticle and then using chemical developers, is not “programmed material consolidation,” as no program is required to effect the basic acts of the photolithography process.

Furthermore, one of ordinary skill in the pertinent art would also readily understand that the consolidation of material films in deposition chambers does not include consolidation of the material in accordance with or under control of a program; rather, in deposition chambers, material consolidates in a nonspecific manner (*i.e.*, as a film) due to a combination of the



chemical reactants that are introduced into the chamber and the conditions (*e.g.*, temperature, pressure, etc.) that are present in the chamber.

Nor does any other conventional semiconductor device fabrication process include “programmed material consolidation.”

The semiconductor device fabrication system described in Aronsatein merely includes a component for conveying individual semiconductor wafers from one *conventional* semiconductor device fabrication process sector to another. Aronsatein does not include any express or inherent description that the system described therein includes at least one fabrication site for effecting a programmed material consolidation process. Therefore, Aronsatein does not anticipate each and every element of independent claim 1, as would be required to maintain the 35 U.S.C. § 102(b) rejection of independent claim 1.

Claims 2-11 are each allowable among other reasons, for depending directly or indirectly from claim 1, which is allowable.

Claim 2 is further allowable since Aronsatein lacks any express or inherent description of a substrate handling system that comprises a rotary feed system. An example of a rotary feed mechanism is disclosed in U.S. Patent 6,121,743 to Genov et al. Although col. 9, lines 4-8, of Aronsatein mentions that handlers 31 may rotate wafers from a horizontal orientation to a vertical orientation, Aronsatein does not expressly or inherently describe that such rotation is effected by a rotary feed system. Rather, as FIG. 4 of Aronsatein clearly shows, handlers 31 travel along a linear path.

Claims 4 and 8 are additionally allowable since Aronsatein does not expressly or inherently describe a system that includes a plurality of fabrication sites for effecting a

programmed material consolidation process. Again, the description of Aronsatein is limited to a system that includes a plurality of process sites that effect conventional semiconductor device fabrication processes, which do not include programmed material consolidation processes.

Independent claim 12 is drawn to a programmable material consolidation system that includes means for fabricating one or more objects and means for handling one or more substrates. The means for fabricating uses a programmed material consolidation process.

The system of Aronsatein is a semiconductor device fabrication system, not a programmable material consolidation system. Further, the system described in Aronsatein lacks means for fabricating that uses a programmed material consolidation process. Therefore, Aronsatein does not anticipate each and every element of independent claim 12, as would be required to maintain the 35 U.S.C. § 102(b) rejection of amended independent claim 12.

Each of claims 13-23 is allowable, among other reasons, for depending directly or indirectly from claim 12, which is allowable.

Claim 13 is further allowable since Aronsatein lacks any express or inherent description of a substrate handling system that comprises a rotary feed system. Again, the disclosure of Aronsatein is limited to handlers 31 that travel along a linear path.

Claims 16 and 20 are additionally allowable since Aronsatein does not expressly or inherently describe a system that includes a plurality of means for fabricating that use a programmed material consolidation process. The process stations of the system described in Aronsatein are, instead, stations for effecting conventional semiconductor device fabrication processes.

It is respectfully requested that the 35 U.S.C. § 102(b) rejections of claims 1-23 be reversed, and that each of these claims be allowed.

B. REJECTIONS UNDER 35 U.S.C. § 103(a)

Claims 24-33 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over the subject matter taught in U.S. Patent 4,027,246 to Caccoma (hereinafter “Caccoma”), in view of teachings from Aronsatein.

1. APPLICABLE LAW

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

2. ART RELIED UPON

*Aronsatein*

Aronsatein teaches a system for conveying individual semiconductor wafers from one semiconductor device fabrication process sector to another. For example, the wafers may be

transported between an oxidation sector, a source and drain implantation sector, a gate oxidation sector, a pattern generating unit, a metallization sector, and a sintering sector. Col. 23, lines 59-66. Identification and movement of each wafer may be controlled by a computer. Col. 24, line 17, to col. 26, line 4.

The system of Aronsatein is not a programmable material consolidation system, in which material is selectively consolidated in accordance with a program. Rather, the system of Aronsatein is a semiconductor device fabrication system. Moreover, while the semiconductor device fabrication system of Aronsatein includes a variety of process sectors, Aronsatein includes no teaching or suggestion that any of these process sectors is configured for effecting a programmed material consolidation process.

*Caccoma*

Like Aronsatein, the teachings of Caccoma are limited to a semiconductor device fabrication system that includes a variety of process sectors that are used to fabricate integrated circuits on a semiconductor wafer. Caccoma does not teach or suggest a programmable material consolidation system, let alone a programmable material consolidation system that includes at least one fabrication site for effecting a programmed material consolidation process

3. ANALYSIS

Independent claim 24 is directed to a programmed material consolidation method for fabricating objects. The method of independent claim 24 includes selecting at least one first substrate, introducing the at least one first substrate into a first fabrication site with a substrate

handling system, selecting at least one second substrate, and introducing the at least one second substrate into a second fabrication site with the substrate handling system. Additionally, the method of independent claim 24 includes fabricating, by way of a programmed material consolidation process, at least a portion of at least one object on the first and second substrates at the first and second fabrication sites, respectively.

Neither Cacomma nor Aronsatein teaches or suggests that a programmed material consolidation process may be used to form at least a portion of at least one object at any of the pieces of fabrication equipment, or process sectors or stations, of the systems disclosed therein. Rather, each process sector or station of both Cacomma and Aronsatein is limited to effecting a single, conventional semiconductor device fabrication process (*e.g.*, oxidation, doping, metallization, photomask formation, etching, cleaning, etc.), none of which includes a programmed material consolidation process.

Therefore, under 35 U.S.C. § 103(a), independent claim 24 recites a programmed material consolidation method which is allowable over the conventional semiconductor device fabrication processes taught in Cacomma and Aronsatein.

Each of claims 25-33 is allowable, among other reasons, for depending directly or indirectly from claim 24, which is allowable.

Reversal of the 35 U.S.C. § 103(a) rejections of claims 24-33 is respectfully solicited, as is the allowance of each of claims 24-33.

VIII. CLAIMS APPENDIX

The current status of each claim that has been introduced into the '783 Application is set forth in CLAIMS APPENDIX to this Appeal Brief.

IX. EVIDENCE APPENDIX

No evidence has been submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132. Accordingly, no EVIDENCE APPENDIX accompanies this Appeal Brief.

X. RELATED PROCEEDINGS APPENDIX

No decisions have been rendered by the Board or any court in a related application. Therefore, this Appeal Brief is not accompanied by a RELATED PROCEEDINGS APPENDIX.

XI. CONCLUSION

It is respectfully submitted that:

(A) Claims 1-23 recite subject matter that, under 35 U.S.C. § 102(b), is novel and, thus, patentable, over the subject matter described in Aronsatein; and

(B) Under 35 U.S.C. § 103(a), the subject matter to which each of claims 24-33 is directed is non-obvious and, thus, patentable over the subject matter taught in Caccoma, in view of teachings from Aronsatein.

**Serial No. 10/227,333**

In view of the foregoing, it is respectfully requested that the Examiner's rejections of claims 1-33 be reversed and that each of these claims be allowed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brick G. Power". The signature is fluid and cursive, with the first name "Brick" being more prominent.

Brick G. Power  
Registration No. 38,581  
Attorney for Applicants  
TRASKBRITT, PC  
P.O. Box 2550  
Salt Lake City, Utah 84110-2550  
Telephone: 801-532-1922

Date: October 26, 2005

BGP/eg

Document in ProLaw



Serial No. 10/705,250

## CLAIMS APPENDIX

1. A programmable material consolidation system, comprising:  
at least one fabrication site for effecting a programmed material consolidation process; and  
a substrate handling system configured to introduce one or more substrates into the at least one  
fabrication site and remove the one or more substrates from the at least one fabrication  
site.
2. The programmable material consolidation system of claim 1, wherein the  
substrate handling system comprises a rotary feed system.
3. The programmable material consolidation system of claim 1, wherein the  
substrate handling system comprises a linear feed system.
4. The programmable material consolidation system of claim 1, wherein the at least  
one fabrication site comprises a plurality of fabrication sites for effecting a programmed material  
consolidation process.
5. The programmable material consolidation system of claim 4, wherein the  
substrate handling system is configured to introduce the one or more substrates into each of the  
plurality of fabrication sites.



6. The programmable material consolidation system of claim 1, further comprising:  
a cleaning component.

7. The programmable material consolidation system of claim 6, wherein the  
substrate handling system is configured to transport the one or more substrates having at least  
one feature fabricated thereon from the at least one fabrication site to the cleaning component.

8. The programmable material consolidation system of claim 7, wherein the at least  
one fabrication site comprises a plurality of fabrication sites for effecting a programmed material  
consolidation process.

9. The programmable material consolidation system of claim 8, wherein the  
substrate handling system is configured to transport substrates from each of the plurality of  
fabrication sites to the cleaning component.

10. The programmable material consolidation system of claim 9, further comprising:  
at least one processing element for controlling operation of the substrate handling system.

11. The programmable material consolidation system of claim 10, wherein the at least  
one processing element is configured to orchestrate movement of substrates from the plurality of  
fabrication sites to the cleaning component.

12. A programmable material consolidation system, comprising:  
means for fabricating one or more objects using a programmed material consolidation process;  
and  
means for handling one or more substrates, the means for handling being configured for  
introducing one or more substrates into the means for fabricating and removing the one or  
more substrates from the means for fabricating.

13. The programmable material consolidation system of claim 12, wherein the means  
for handling comprises a rotary feed system.

14. The programmable material consolidation system of claim 12, wherein the means  
for handling comprises a linear feed system.

15. The programmable material consolidation system of claim 12, wherein the means  
for fabricating comprises at least one fabrication site.

16. The programmable material consolidation system of claim 12, comprising a  
plurality of the means for fabricating using a programmed material consolidation process.

17. The programmable material consolidation system of claim 16, wherein the means  
for handling is configured for introducing the one or more substrates into each of the means for  
fabricating.

18. The programmable material consolidation system of claim 12, further comprising:  
means for cleaning the one or more substrates.

19. The programmable material consolidation system of claim 18, wherein the means for handling is configured for transporting the one or more substrates having at least one feature fabricated thereon from the means for fabricating to the means for cleaning.

20. The programmable material consolidation system of claim 19, comprising a plurality of means for fabricating using a programmed material consolidation process.

21. The programmable material consolidation system of claim 20, wherein the means for handling is configured for transporting substrates from each of the plurality of means for fabricating to the means for cleaning.

22. The programmable material consolidation system of claim 20, further comprising:  
at least one processing element for controlling operation of the means for handling.

23. The programmable material consolidation system of claim 22, wherein the at least one processing element is configured for orchestrating movement of substrates from the plurality of means for fabricating to the means for cleaning.

24. A programmed material consolidation method for fabricating objects, comprising:  
selecting at least one first substrate;  
introducing the at least one first substrate into a first fabrication site with a substrate handling  
system associated therewith;  
fabricating at least a portion of at least one object at the first fabrication site by a programmed  
material consolidation process;  
selecting at least one second substrate;  
introducing the at least one second substrate into a second fabrication site with the substrate  
handling system; and  
fabricating at least a portion of at least one object at the second fabrication site by a programmed  
material consolidation process.

25. The method of claim 24, wherein introducing the at least one second substrate is  
effected while one or more objects are being fabricated on the at least one first substrate.

26. The method of claim 24, further comprising:  
selecting at least one third substrate; and  
introducing the at least one third substrate into a third fabrication site with the substrate handling  
system.

27. The method of claim 26, wherein introducing the at least one third substrate is effected while one or more objects are being fabricated on both the at least one first substrate and the at least one second substrate.

28. The method of claim 24, further comprising:  
removing the at least one first substrate from the first fabrication site with the substrate handling system while one or more objects are being fabricated on the at least one second substrate.

29. The method of claim 28, further comprising:  
transporting the at least one first substrate to a cleaning component with the substrate handling system following removing.

30. The method of claim 28, further comprising:  
introducing at least another substrate into the first fabrication site with the substrate handling system following removing.

31. The method of claim 26, further comprising:  
removing the at least one first substrate from the first fabrication site with the substrate handling system while one or more objects are being fabricated on both the at least one second substrate and the at least one third substrate.

32. The method of claim 31, further comprising:  
transporting the at least one first substrate to a cleaning component with the substrate handling  
system following the removing.

33. The method of claim 31, further comprising:  
introducing at least another substrate into the first fabrication site with the substrate handling  
system following the removing.